

Spectral analysis

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Updated date: Mar 23, 2021

 An abbreviated version of this protocol was published in eLIFE in Jul 2020

An electrophysiological marker of arousal level in humans

DOI: 10.7554/eLife.55092

Detailed protocol

1. For how to calculate and plot the multitapered power spectrum, refer to the original paper on multitaper spectral analysis:

Prerau et al. 2016. Sleep trough the lens of multitaper analysis (<https://doi.org/10.1152/physiol.00062.2015>)

They also provide online tutorials and MATLAB code here:

<https://prerau.bwh.harvard.edu/multitaper/>

2. To calculate the power also see the fieldtrip implementation here:

https://www.fieldtriptoolbox.org/faq/how_can_i_do_time-frequency_analysis_on_continuous_data/

You will find the code in the tutorial. Use "dpss" instead of "hanning".

3. Code for fits to the PSD is available here

- poly fit - see code here: <https://github.com/voytekresearch/EISlope>

- robustfit - see code here: <https://github.com/kosciessa/eBOSC>

- model fit (FOOOF) - see code here: <https://github.com/foof-tools/foof>

How to cite: (Readers should cite both the Bio-protocol preprint and the original research article where this protocol was used)

1. Lendner, J. (2021). Spectral analysis. Bio-protocol Preprint. bio-protocol.org/prep958.
2. Lendner, J. D., Helfrich, R. F., Mander, B. A., Romundstad, L., Lin, J. J., Walker, M. P., Larsson, P. G. and Knight, R. T. (2020). An electrophysiological marker of arousal level in humans. eLIFE. DOI: [10.7554/eLife.55092](https://doi.org/10.7554/eLife.55092)

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